

# **mulation Studies of Charm and Bottom Decays Using the Silicon Vertex Detector Upgrade at PHENIX**

**R. Petti**<sup>a</sup>, for the PHENIX Collaboration

<sup>a</sup> Department of Physics and Astronomy, Stony Brook University  
Stony Brook, NY 11794-3800, USA

Contact e-mail: *rpetti@skipper.physics.sunysb.edu*

A silicon vertex detector upgrade is being developed for use in the PHENIX detector at the Relativistic Heavy Ion Collider (RHIC) located at Brookhaven National Lab (BNL). This detector features four layers to enable charged particle tracking near the collision vertex. The inner two layers (sitting at radius of 2.5cm and 5.0cm from the beam line) are constructed of pixel sensors, where as the outer two layers (at 10cm and 14cm) are of a novel stripixel design. This upgrade will significantly improve the collision vertex resolution of PHENIX. This allows us to detect off-vertex decays and to separate charm and bottom decays by the DCA (Distance of Closest Approach) resolution. The DCA is calculated by first identifying electron tracks in the PHENIX central arms and projecting the track back to track candidates in the VTX. Then the matching VTX track can be traced back towards the collision vertex and the point at which the distance between the collision vertex and the helical track is smallest can be found. Results on charm/bottom separation from a full Monte Carlo simulation will be presented.

## **References**